Reef Response Current Conditions June/July 2014

Hawaii Division of Aquatic Resources
Department of Land and Natural Resources

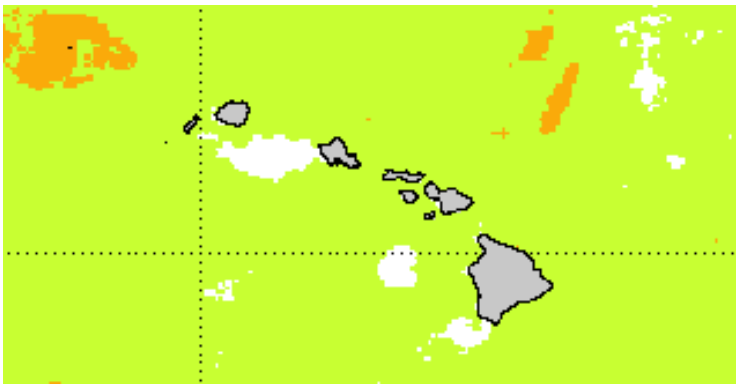
Report SUMMARY:

In June and July 2014, 27 reports were received through the Eyes of the Reef Network. Three Rapid Assessments were initiated. A coral disease outbreak continues to affect the north shore of Kauai. DAR is awaiting results from samples taken after a die-off of flying gurnards on Oahu.

June/July 2014 EOR Report Summary

Coral Bleaching

One coral bleaching report was received through the Eyes of the Reef Network in June and July 2014. There was Bleaching "Watch" alert issued for Oahu through NOAA Coral Reef Watch. No Rapid Responses were initiated.



NOAA Potential Bleaching Intensity Levels

No Stress	No bleaching
Bleaching Watch	Possible bleaching
Bleaching Warning	Possible bleaching
Alert Level 1	Bleaching Likely
Alert Level 2	Coral Mortality Likely

Figure 1. Current NOAA CRW Bleaching Alert Area, Exp. 5 km 8/13/2014 (http://coralreefwatch.noaa.gov/satellite/bleaching5km))

Coral Disease

There were a total of four EOR Network reports of coral disease in June/July 2014. Three of the reports were from the north shore of Kauai in response to the ongoing Black Band Disease outbreak. No Rapid Assessments were initiated but additional field work will take place in August 2014.

DAR staff will continue to monitor an isolated patch of diseased corals at Keahou on Hawaii Island.

DAR staff on Kauai visually assess coral disease on Kauai's north shore. Photo credit: DAR

DAR staff presented on Reef Response topics at the 2014 Hawaii Conservation Conference in Honolulu. Photo Credit: DAR

Other Reports

There were a total of twenty EOR Network reports of fish (all gurnards) and one sea urchin mortality in June/July 2014. Two Rapid Assessments were conducted as a result of these reports. Samples of the gurnards were collected by DAR staff at Waikiki, Oahu and sent for analysis by the US Geological Survey Wildlife Health Center.

A dramatic decline in urchin disease was documented in Kaneohe Bay and therefore the State's outplanting efforts resumed.

	Total Number of Reports Received in June - July 2014
Coral Bleaching	1
Coral Disease	4
COTS	1
Fish Mortality	20
Other	1

Urchins ready for outplanting. Photo credit: DAR

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More information:
www.dlnr.hawaii.gov/reefresponse

Reef Response
Coral Bleaching Current Conditions – June/July 2014
Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events

Bleaching Conditions Summary:

NOAA Coral Reef Watch indicated 1 coral bleaching alerts in the MHI in June and July 2014. NOAA outlook maps predicts likely bleaching this season. The EOR network received 1 report of bleaching in June and July 2014. No Rapid Assessments were initiated in response to bleaching reports.

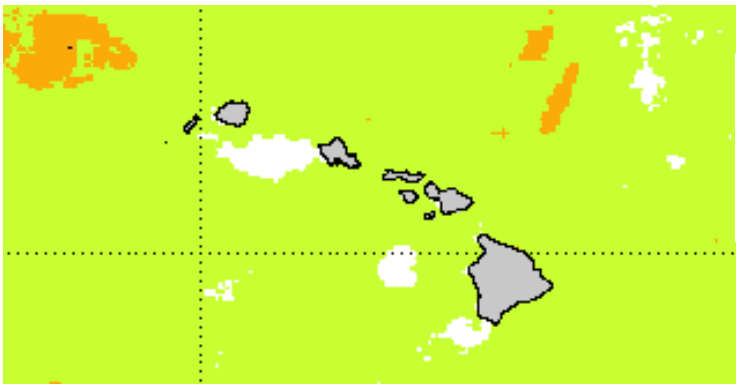

Figure 1. Current NOAA CRW Bleaching Alert Area, Exp. 5 km 8/13/2014

NOAA Potential Bleaching Intensity Levels

No Stress	No bleaching
Bleaching Watch	Possible bleaching
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Alert Level 1	Bleaching Likely
Alert Level 2	Coral Mortality Likely

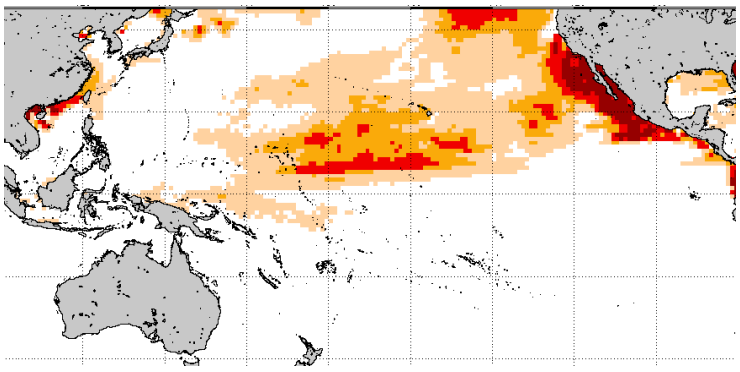

Figure 2. NOAA CRW Bleaching Outlook for Jun—Sept 2014

NOAA Predicted Bleaching Intensity Levels

Watch	No bleaching
Warning	Possible bleaching
Alert Level 1	Bleaching Likely
Alert Level 2	Coral Mortality Likely

NOAA Virtual Station Thermal Stress Levels—8/13/2014

Kauai and Niihau	No stress
Oahu	Bleaching Watch
Maui and Molokai	Bleaching Watch
Lanai	Bleaching Watch
Kona, Hawaii Island	Bleaching Watch
Hilo, Hawaii Island	No stress

NOAA Coral Reef Watch Summary

A NOAA Coral Reef Watch "Bleaching Watch" is issued when sea surface temperatures (SST) in those areas may be causing low-level thermal stress to corals. The alerts are scaled based on the intensity of the bleaching risk. These products are experimental and generally tend to overestimate bleaching conditions. Currently, the island of Oahu has reached the "watch" threshold, indicating a low risk of mass coral bleaching (Figure 1). An experimental NOAA bleaching outlook map predicts likely bleaching for the MHI (Figure 2). Peak bleaching season is from July—September.

Data from NOAA's virtual stations are derived from the operational 50m satellite products. Virtual offshore measuring stations indicate that Sea Surface Temperatures (SST) surpassed the maximum monthly mean at the Oahu station during June/July 2014 (Figure 3).

EXAMPLE of coral bleaching, photo: J. Kenyon

EXAMPLE of coral bleaching, photo: K. Heide

EOR Network Coral Bleaching Reports

There was one Eyes of the Reef (EOR) Network report of coral bleaching in June/July 2014. No Rapid Assessments were initiated.

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Reef Response
Coral Disease Current Conditions – June/July 2014
Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events

Coral Disease Conditions Summary:

In Spring 2014, the Kauai cyanobacterial coral disease continued to progress affecting three species of rice (*Montipora*) corals along the north shore. A DAR-led Management Response Team was formed in January 2014.

The EOR Network received four reports of coral disease in Spring 2014. DAR staff will continue to monitor the site near Keauhou, Hawaii Island.

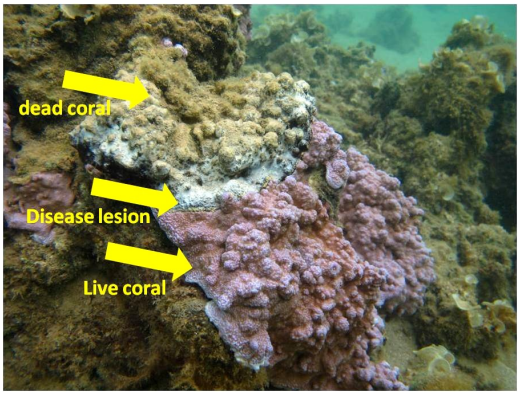
June/July 2014 Coral Disease Summary

Overall, the causes of coral disease events are relatively poorly understood. Diseased coral often die quickly, outbreaks can change dramatically and can vary seasonally. Disease outbreaks often follow other disturbances including bleaching, flood plumes, and storms. These stresses all disturb coral due to physical injury and/or coral physiology. Reduced coral health leads to an increase in disease risk.

There have been four coral disease outbreaks in the MHI since 2008. The most recent outbreak occurred on the north shore of Kauai, first recorded at an epidemic level in 2012. In 2013, DAR helped to support a PhD student from the Hawaii Institute of Marine Biology who is mapping the prevalence of the Black Band Disease (BBD) and measuring potential environmental drivers. In January 2014, DAR coordinated the formation of a Management Response Team (MRT) to review incoming monitoring data and discuss effective management actions. Several other agency partners have been instrumental in this effort including NOAA, USGS, UH, EPA, UH SeaGrant, and several Kauai-based organizations. The next surveys are planned for August 2014.

For more information and latest updates, please go to the team's website: **http://dlnr.hawaii.gov/reefresponse**

DAR Education Specialist leading an education activity on coral health on Kauai. Photo credit: DAR



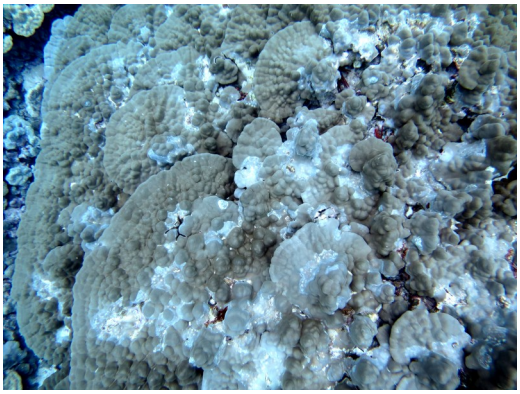
BBD on a Montipora coral. Photo credit: C. Runyon (UH)

EOR Network Coral Disease Reports

There were a total of four EOR Network reports of coral disease in Spring 2014. Three reports were from known locations of the BBD affecting the north shore of Kauai. One report was from the Keahou area of Hawaii island, DAR biologists will continue to monitor this area.

Makua, Kauai. Photo credit: DAR

Honoiki, Kauai. Photo credit: S. Bacon



Keauhou, Hawaii. Photo credit: L. Preskitt

For more information on coral disease, please visit DLNR's Reef Response website:
www.dlnr.hawaii.gov/reefresponse

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Reef Response
COTS, Fish, Miscellaneous Current Conditions – June/July 2014

Rapid Assessment of Coral Bleaching, Disease, COTS, and Marine Life Mortality events

COTS, Fish, and Miscellaneous Conditions Summary:

There were twenty fish and one urchin EOR report which resulted in two Rapid Assessments in June/July 2014. Samples of dead juvenile flying gurnards were collected from Waikiki, Oahu for analysis. DAR continues to monitor affected areas. The Oahu urchin disease showed dramatic decline in prevalence and urchin restoration work resumed.

Crown-of-Thorns-Starfish (COTS) and Miscellaneous Summary

Crown-of-thorns-starfish (COTS) are coral-eating starfish that have the potential to take over coral reefs quickly. Damaging outbreaks have been seen in other areas of the Pacific. In 2013, both the Great Barrier Reef in Australia and areas in American Samoa experienced severe outbreaks. In Hawaii, two localized COTS outbreaks were recently reported and assessed in 2012. Those have been the only major reports of COTS in large numbers since 2008.

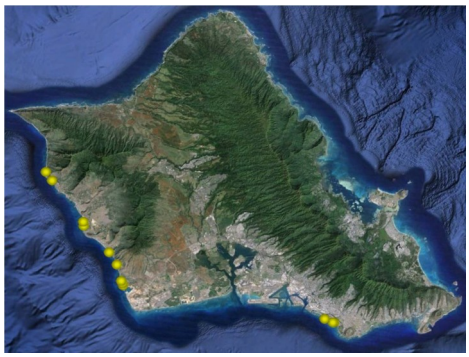
Although not officially covered in the RRCP, the EOR Network does receive reports of other types of unusual events including fish disease, invasive species, native species blooms, and miscellaneous observations. This was valuable during the 2010 pufferfish die-off when the EOR Network was engaged to collect affected specimens.

EOR Network COTS Reports

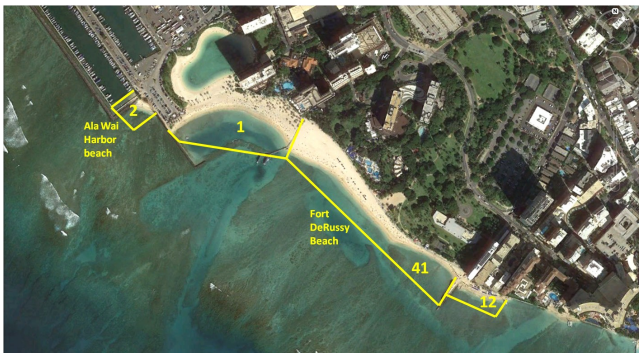
There was one report of COTS in Hawaii in June/July 2014. No Rapid Assessments were initiated.

EOR Network Fish Disease/Mortality Reports

There were twenty EOR reports of fish mortality in June and July 2014. All reports were of a confirmed fish mortality event in early July of juvenile flying gurnards (*Dactyloptena orientalis*) on the south and west shore of Oahu and Kauai. A similar event was observed and recorded in 2004 by DAR biologists. It is thought to be a natural occurrence, possibly to do with spawning cycles. Samples were collected by DAR staff at Waikiki, Oahu and sent to the US Geological Survey's Wildlife Health Center for analysis. Results are expected in mid-August.



Location of flying gurnard reports. Map credit: DAR

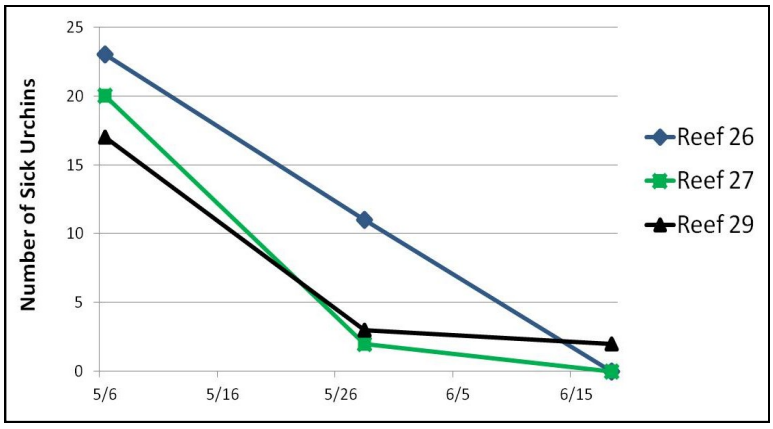


Surveyed area of Waikiki, Oahu indicating numbers of dead juvenile gurnards found. Map credit: DAR

Flying gurnard, Waikiki, Oahu. Photo credit: DAR

EOR Network Miscellaneous Reports

The EOR Network received one report of sick-looking sea urchins in June/July 2014. The disease affecting sea urchins on Oahu was shown to significantly decline and therefore urchin outplanting restoration work resumed on June 30, 2014. More information about the response to the urchin disease can be found on the team's website at **www.dlnr.hawaii.gov/reefresponse**.



Results of urchin monitoring in Kaneohe Bay. Credit: DAR

Urchins ready for outplanting. Photo credit: DAR

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